Changeability dynamics of basic anthropometric indexes of newborn children from regions with different ecological situations

EN Krikun[1], VV Boldyr[1], RF Kapustin[2]*, IA Zinchenko[1]

[1]Department of Human Anatomy and Histology, Belgorod State University, Belgorod, Russia, [2]Department of Animal Morphology, Belgorod State Agricultural Academy, Maiskii Belgorodskoi oblasti, Russia

We have carried out the research on revealing of changeability of main morph - functional indexes of newborn children in dependence on ecological situation in regions of their mothers living from 1973 to 2004. Statistical analysis of morph - functional indexes of newborn children by individual traits in dependence on ecological situation in regions of their birth and their mothers living has shown that body dimensions of newborn boys from regions with critical ecological situations (ESC) have no accident greater mean values as compared with newborn boys from regions with satisfactory ecological situations (ESS). Their body mass is greater by 90 grams ($p<0,001$), head circumference - by 0,33 centimeter ($p<0,001$), chest circumference - by 0,46 centimeter ($p<0,001$). These children give in insignificantly to newborn boys from regions with tense ecological situation (EST) in erythrocytes level. Other traits have not given any essential differences. The results of dispersion analyses of some morph – functional traits of newborn girls in dependence on ecological situation testify to no accident character of differences in indexes of circumferences of head and chest, and in level of Apgar trait. So, average levels of head circumference of newborn girls from ESC regions are greater by 0,25 centimeter as compared with newborn girls from EST regions ($p<0,01$). These children have greater average levels of chest circumference as compared with children from EST and ESS regions by 0,26 centimeter accordingly ($p=0,001$). Average level of their functional condition on Apgar scale is lower (by 0,25 points) as compared with children from ESS regions, but this index doesn't deviate from the framework of normal value ($p<0,01$). Degree of multidimensional differences of children's groups from regions with various ecological situations by complexes of traits has been measured with the help of distances of Mahalanobis with calculation for them value of F-criterion. The results of investigations have shown that during the period from 1973 to 2004 the dynamics of intergroup changeability of basic anthropometric indexes of newborn children is characterized by insignificant increase of their mean values in regions with critical ecological situation in an interval from 1973 to 1985. By the end of XX century mean values of these characteristics of newborn children from regions with various ecological situations have become smooth. This fact can be explained by reduction of anthropogenic loading in a period from 1985 to 2000 in connection with common economic fall of production.

*Corresponding author
E-mail: romankapustin@mail.ru

The morphology of immune competent organs in neonatal productive animals

B Krishtoforova, V Lemeshchenko*

Chair of Anatomy and Physiology of Animals, Southern branch "Crimean Agrotechnological University" of National Agricultural University, Simferopol, Ukraine

The birth of animals with low viability occur in contemporary conditions that is confermed by their diseases with frequent letal result, on their first days of life. The prenatal underdevelopmment, owing to breach placental barrier, is the basic cause of lowering of the natural resistance in neonatal animals (Vodel 1977; Хрусталева1995; Левченко, Надточій 1998; Грабчак 2000; Даньків 2002). The aim of our researches is to determine the morphology peculiarities of immune competent organs in neonatal calves and piglets. We had investigated immune competent structures (the organs of universal hemo-and-immunopoiesis and also limphocytopoiesis) in one day old calves (n=15) and piglets (n=15), using the complex of methods: anatomical preparation, X-ray method, microscopy of hystilogical preparations and statistic. The result of our research is following. The immune competent organs were determined on the anatomical level in neonatal animals. Diaphysal and epiphysal hearths of ossification were exposed into the organs of universal hemo-and-immunopoiesis (bone organs) by X-ray method in both

calves and piglets. The apophysal ones are tipical for long tubular bone organs of extremities in calves and it is absent in piglets. The formation of bone tissue is the result of endesmal and enchondral ossification in one day old calves and piglets. The endesmal osteogenesis occur in diaphysis of the long tubular bones. Compact bone tissue is of smesh structure, and connective tissue, blood vessels and nerves are disposed in its cells. The spongy bone tissue is formed by enchondral osteogenesis but red bone marrow, realizing function of universal hemo-and-immunopoiesis, is situated in its cells. Anatomically thymus possesses pair and impair cervical lobes and also impair thoracal ones in the neonatal calves and piglets, but its absolute mass is 105.0-175.0 g, relative one is 0.5-0.75% in calves. The cortical-and-medullar ratio constitutes 1:2 or 1:3 in thymical lobules. In neonatal animals the spleen is also anatomicaly formed. Parenchime of the spleen is formed by red pulp (75.5%-88.5%) and white one or diffusive and nodular lymphoid tissue (7.5%-12.3%). The individual splenic lymphoid nodules have germenative centers. That is the evidence of their particular functional activity. It should be noted, the analogeous lymphoid nodule (with germenative centers) is formed in limphatic knots, especially in visceral ones, but also in limphoid structure associating with mucosal cover of digestive organs in developed neonatal calves and piglets. Thus on anatomical and tissue levels the immune competent organs are characterized by some incompleteness in neonatal maturity animals. However they are able to react, to a certaine degree, on the influence of genetic alien agents that is confirmed by the presence of the lymphoid nodule with germenative centres.

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*Corresponding author
E-mail: lemeshenko@mail.ru

Stuctural-and-functional peculiarities of hepatic veins and components of tissue in piglets of neonatal period

B Krishtoforova, V Lemeshchenko*

Chair of Anatomy and Physiology of Animals, Southern branch "Crimean Agrotechnological University" of National Agricultural University, Simferopol, Ukraine

The liver in mammals is a poly functional organ, developing in a prenatal period of ontogenesis as a structural component of the digestive apparatus and in a postnatal period of development adopting the function of «metabolic brain» of the organism (Розен и др 1991). The liver of a new-born human and immaturity mammals (white rats) remains the certain uncompleteness of structure, that can be observed in the absence of classic structure lobules, saved hearths of hemopoiesis and temporary vascular formations (umbilical vein and venous duct), associating with the organ. Research, devoted structural features and morphogenesis of vascular and tissue components of liver in neonatal period piglets, are occasional (Смирнова 1967; Kaman 1968). The purpose of our research is to set the stuctural-and-functional peculiarities of hepatic veins and components of tissue in piglets of neonatal period. Afferential and efferential veins, stromal and parenchimal components of the liver were determined in 1-20 days old piglets, using the morphological, X-ray anatomical and statistical methods. The results of research are following. Afferential (umbilical and portal) and efferential (caudal cava and hepatic) veins form afferential and efferential collectors accordingly. They regulate the intensity of intraorganical blood flow and volume of blood current to the heart from the abdominal region in one day old piglets. They do not only communicate by sinusoids of "rete mirabile" in parenchime of the organ but also by means of plural portal-and-caval anastomosis, which are the analogues of venous duct (Fig. 1). The parenchime of the liver has a spongy structure in one day old piglets. Hepatocytes form the ramified beams, sinusoids and shallow hemopoietic hearths are disposed among them. The lobules of classic structure are not found in the liver. The umbilical vein almost fully was obliterated in 10 day's old piglets, saving a narrow, winding road clearance for certain animals, and